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Early Change in Coping Strategies in Responsive Treatments for Borderline Personality Disorder: A Mediation Analysis

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Abstract

Background: Difficulty in emotion regulation is a hallmark feature of patients with borderline personality disorder (BPD). Therefore, change in the frequency of certain patient's coping strategies - aiming at emotion regulation - are among the most promising mechanisms of change in treatments for BPD. In parallel, it was highlighted that therapist responsiveness significantly contributed to outcome across treatment approaches (Stiles, 2009). Based on a randomized controlled trial (Kramer et al., 2014), the present process-outcome mediation analysis aims at examining the patient's early change in frequency of coping strategies - in particular the decrease in behavioral forms of coping - as potential mechanism of change in responsive treatments for BPD.

Methods: A total of $N = 57$ patients with BPD were included in the present analysis, out of whom $n = 27$ were randomly assigned to a 10-session psychiatric treatment and $n = 30$ to a 10-session psychiatric treatment augmented with the responsive intervention of the motive-oriented therapeutic relationship (Caspar, 2007). The first, fifth and 9th session of each therapy were transcribed and analyzed using the Coping Action Pattern Rating Scale (Perry et al., 2005; $N = 171$ sessions analyzed in total), a validated observer-rated method for assessing coping strategies in the therapy process. Psychological distress was assessed using the OQ-45 at intake, after session 5 and after session 10.

Results: The results confirmed a responsiveness effect associated with the motive-oriented therapeutic relationship and showed a significant decrease in frequency of behavioral forms of coping ($F(1, 54) = 3.09$, $p = .05$, $d = .56$), which was not different between the two conditions. In addition, we demonstrated that the early decrease in behavioral forms of coping between sessions 1 and 5 partially mediated the link between the group assignment and the change in psychological distress between sessions 5 and 10.

Conclusions: These results shed light on the centrality of therapist responsiveness in treatments for BPD and its impact on very early change in patient's in-session behavioral coping strategies, contributing to the effectiveness of short-term treatments for BPD.
Key-Words: Borderline Personality Disorder; Coping; Psychiatric Treatment; Motive-Oriented Therapeutic Relationship; Therapist Responsiveness; Mediation

Public health implications

1) It is important for clinicians to assess the qualities of coping strategies as they occur within the session facing a patient with borderline personality disorder.
2) Clinicians may individualize their interventions, guided by a case formulation, which produces direct specific effects on symptom relief between sessions 5 and 10 sessions into treatment.
3) Clinicians may monitor closely the borderline patient's use of specific emotion regulation strategies, in particular behavioral forms of coping. Decrease in behavioral forms of coping is linked with symptom relief and this process may be fostered by individualized interventions, both becoming indicators of good therapy process.

Introduction

Unproductive coping strategies are central features of many patients presenting with Borderline Personality Disorder (BPD; Linehan, Bohus, & Lynch, 2007; Livesley, 2016). The concept of coping with stress has gained in interest and structure; it describes the great variety of strategies used by patients in a process that aims at emotion regulation (Skinner, Edge, Altman, & Sherwood, 2003). A key feature of a productive therapy for patients with BPD is an early change in coping strategies (McMain et al., 2013), in particular the early reduction of behavioral forms of coping – by limiting impulsive actions and acting out (Neacsiu et al., 2010). Behavioral coping consists of a wide variety of individual behavioral responses, not just self-destructive behaviors; it involves personality-related coping strategies, behavioral attempts of problem solving and oppositional behavioral responses to stress (Skinner et al., 2003); in BPD we may assume that they are particularly harmful and unproductive. We may assume that changes in these behavioral responses to stress change early in effective therapy for BPD, and that treatments where the therapist is appropriately responsive to the patient's in-session characteristics (Stiles, 2009) are those where such productive coping change is most central.

Among several ways of operationalizing appropriate therapist responsiveness, we will focus on the motive-oriented therapeutic relationship (MOTR; Caspar, 2007), based on the Plan Analysis approach, an idiographic case formulation based on the in-session patient's non-verbal and verbal manifestations. The responsiveness effect was demonstrated by Grawe, Caspar and Ambühl (1990) where treatments with and without Plan Analysis and the corresponding responsive interventions (MOTR) were compared. Baseline characteristics were related with symptom change only in treatments where the responsive components were not used; on the contrary, no such relationship between baseline predictors and outcome was found in responsive treatments. This difference may be explained by the responsiveness

effect: adequately responsive therapist interventions – adapted to the individual patient, such as those consistent with MOTR –, tend to wash out the predictive power (for outcome) of otherwise strong baseline predictors. It remains unclear which patient mechanism of change is responsible for this effect. For patients with BPD, we posit change in frequency of coping strategies – in particularly decrease in behavioral forms of responding to stress – as a potential mechanism of change in responsive treatments. In order to test such an assumption, it was discussed that self-report assessment of coping strategies might be limited on methodological and conceptual grounds (Neacsiu et al., 2010; Nisbett & Wilson, 1977); in-session assessments of these variables address these problems, in that they allow to more firmly conclude about the central process at play in actual therapy sessions.

We aim to demonstrate that (a) there is a responsiveness effect (as defined above) in treatments based on MOTR; the comparison treatment should show strong baseline predictors for outcome, which should disappear in the case of MOTR. We aim to test whether (b) there is a decrease in frequency of unproductive coping strategies (i.e., where the stress is appraised as threat; Skinner et al., 2003), over the course of the first 10 sessions of therapy (for all conditions), (c) whether the use of MOTR fosters greater decrease in unproductive coping than in the comparison group, and we aim to test (d) a mediation model where we assume that the change in behavioral forms of coping mediates the link between treatment type (MOTR or not) and symptom change.

Method

The present process-outcome study is a secondary analysis of a previously published two-arm randomized controlled trial testing the additive value of MOTR as operationalization of appropriate responsiveness (Stiles, 2009), when added to a 10-session version of General Psychiatric Management (GPM; Kramer et al., 2014). This main study has described small to

medium between-group effect sizes ($0.06 < d < 0.64$) favoring the added component for decrease in psychological distress, over 4 months of treatment.

Sample

An a priori power analysis yielded a minimum of $N = 57$ patients to be included in the present process-outcome analysis (i.e., a presumed power of 0.80, an expected medium effect size, three assessment points per subject, a two-tailed alpha of .05). Inclusion criteria for this process-outcome analysis were a sufficient number of tape- or video-recorded sessions of sufficient quality and complete outcome data at three time-points (session 1, session 5 and session 10).

Thirty-eight (67%) patients were female. The patients had a mean age of 33.7 years (SD = 9.9; ranging from 20 to 55). All patients were French-speaking and had a DSM-IV diagnosis of BPD, as diagnosed by the Structured Clinical Interview for DSM-IV Axis II Personality Disorders (SCID-II; First, Spitzer, Williams, & Gibbons, 2004). All additional diagnostic information with regard to this sample is summarized in Table 2 (see also Kramer et al., 2014).

Treatments and treatment integrity

The present process-outcome study using data from an add-on trial, the basic treatment was a 10-session short version of GPM (Gunderson & Links, 2014) for both conditions. The add-on component was the use of the individualized case formulation method called the Plan Analysis (Caspar, 2007) and the implementation of the responsive interventions according to the MOTR during the 10 therapy sessions. Treatment integrity was assessed by applying the two scales validated within each of the therapy models, GPM and MOTR. As reported by Kramer and colleagues (2014), there was excellent treatment integrity for both the GPM condition (GPM adherence scale: Mean = 4.32; SD = 0.37) and the MOTR condition (Mean = 4.37; SD = 0.26), which did not differ between the conditions ($t(1, 38) = .58$; $p = .57$). Greater

adherence to MOTR in the GPM plus MOTR condition (by using the Plan Analysis and MOTR ratings; Mean = 1.55; SD = 0.44), compared to the GPM condition (Mean = 0.48; SD = 0.39; $t(1, 56) = 10.53$, $p = .00+$).

Instruments

Outcome Questionnaire-45.2 (OQ-45; Lambert, et al., 1996). This self-report questionnaire encompasses 45 items and measures the level of distress. The validation coefficients of the original English version are satisfactory, as well as for the French version used in the present study (see the description by Kramer et al., 2014). Cronbach's alpha for this sample was .95.

Coping Action Patterns Rating Scales (CAPRS; Perry, Drapeau, & Dunkley, 2005; French translation and validation by Kramer & Drapeau, 2011). The CAPRS is an observer-rating system assessing coping processes based on interview-transcripts. It is based on Skinner and colleagues' (2003) hierarchical conception of the structure of coping and encompasses 12 categories of coping, nested within three domains (used in the present study): competence, resources and autonomy, nested within the criteria of productive (i.e., stress appraised as challenge) vs unproductive (i.e., stress appraised as threat) coping (see Table 1). An Overall Coping Functioning (OCF) score was computed representing the relative frequency of challenge-coping (i.e., all productive coping taken together; divided by the total number of coping). Generally, each specific coping strategy can be described from its action level: a) affective, b) behavioral, and c) cognitive. Given our specific interest in behavioral coping as particularly unproductive in BPD, we will analyze these action levels a, b and c. Rating was based on a manual (Perry et al., 2005) describing indicators of coping in the in-session speech from both content and process levels, thus justifying an observer rated approach. All frequencies of coping were controlled for the number of words produced per 1000. For the current study, reliability coefficients on 39 ratings from a total of 171 (23%) of

the ratings were established among trained raters and yielded satisfactory results in terms of intra-class correlation coefficients (2, 1) varying between .46 and .95 (M = .76; SD = .16; .46 being the only coefficient under .65).

Procedure

Outcome (using the OQ-45) was assessed at three time-points over the course of the 10-session treatment: (1) after the intake session, (2) after session 5, and (3) after session 10.

Once the outcome study was completed, we selected three sessions per case for process analyses: session 1, session 5 and session 9. Session 1 was chosen in order to have information on the very first contact, session 5 was chosen as part of the mid-treatment and session 9 (or penultimate) was chosen to access information from the late process (i.e., we did not choose the last session, because it entailed a more structured process). If the selected session was unavailable, we selected the next available session (this was necessary in 10 cases (5% of all sessions)). All interviews were video- or audio-recorded. These $N = 171$ therapy sessions were transcribed word by word. The transcripts were anonymized and given a code, so it was impossible for the rater to infer which condition the patient belonged to and which session (early, mid or late) it was. Ratings used these transcripts as a basis and were done by two PhD level students in clinical psychology, along with other trained raters. All raters had at least 3 months of training prior to study. Raters were unaware of the study hypotheses.

Data Analytic Strategy

For the preliminary analyses, a series of independent *t*-tests were conducted. We also showed the outcome effects on the OQ-45 for the present sub-sample, by using repeated measures ANOVA. In order to demonstrate the responsiveness effect (hypothesis a), we conducted Pearson's correlation analyses between symptom level at intake and discharge, separately for both conditions, followed by Fisher's *z* transformation. In order to demonstrate the change in coping variables (global score and per domain, hypothesis b), we conducted

repeated measures ANOVAs (2 conditions by 3 time-points) and we examined the time x condition interaction (hypothesis c), by adding Polynomial post-hoc tests. In order to test the simple mediation model (hypothesis d) stating that change in frequency of behavioral coping mediated effects of treatment, we used the recommendations by Preacher and Hayes (2004) for computation of indirect effects, using 5000 bootstrap replications and a 95% confidence interval.

Results

The *t*-tests revealed no between-group difference with regard to overall coping functioning (OCF) at intake ($t(1, 55) = 0.96$, $p = .34$), nor the number of words produced; the latter was 4596 and 4430, respectively for GPM and GPM & MOTR ($t(1, 55) = 0.38$, $p = .70$). This was also true for the three action levels at intake: affective ($t(1, 55) = -0.87$, $p = .39$), behavioral ($t(1, 55) = -0.98$, $p = .33$) and cognitive ($t(1, 55) = 1.21$, $p = .23$). Five of the six domains of the CAPRS did not reveal any difference at intake (stress appraised as challenge: competence: $t(1, 55) = 0.40$, $p = .69$; resources: $t(1, 55) = 0.03$, $p = .98$; stress appraised as threat: competence: $t(1, 55) = -0.44$, $p = .66$; resources: $t(1, 55) = -0.72$, $p = .47$; autonomy: $t(1,55) = -0.78$, $p = .44$). However, the autonomy domain where the stress is appraised as challenge differed between the two conditions: the MOTR patients used this coping strategy less frequently at the very first session than their counterparts ($t(1,55) = 2.68$, $p = .01$). In addition, our analyses revealed that gender and marital status were related with condition (see Table 2). Consistent with our findings from the overall sample (Kramer et al., 2014), we demonstrated outcome effects on psychological distress for the present sub-sample. Using 2 x 3 repeated measures ANOVA, we showed a significant distress reduction for both groups (main effect $F(1, 54) = 16.87$, $p = .00+$) and a significant interaction condition x time $F(1, 54) = 4.93$, $p = .01$). Post-hoc tests revealed that this interaction effect was only significant

between sessions 5 and 10: in the GPM & MOTR-condition, symptom level decreased, in the GPM only condition, symptom level remained stable between sessions 5 and 10.

The Pearson's correlation between OQ score at intake and OQ score at discharge for the GPM condition was $r = .75$, $p = .00+$ (transformed $z = .97$), the Pearson's correlation between OQ score at intake and OQ score at discharge for the MOTR condition was $r = .36$, $p = .05$ (transformed $z = .38$; between-group difference significant at $p < .05$). The individualization of the intervention using MOTR had significantly weakened the relationship between intake distress and discharge distress. Thus, we observed a responsiveness effect (hypothesis a).

We found no change in the overall coping functioning (OCF), between session 1 and 9, for both conditions (see Table 3). When analyzing the CAPRS domains, we found a significant decrease in behavioral coping (and no change for the affective and cognitive forms of coping) which was not different between the groups. No other effect was significant (hypotheses b and c). These effects held true when gender and marital status - which showed differences at intake – were controlled for in a 2 x 3 repeated measures ANCOVA. We re-ran all of the above main analyses using three-level HLM over three time-points (Bryk & Raudenbush, 1987), with consistent results.

In order to control for the time effect in the mediator analysis (i.e., the mediator variable needs to change before the outcome variable; hypothesis d), we examined early change on behavioral coping (between session 1 and 5) and "late" change on the outcome (between sessions 5 and 10). Results revealed a significant partial mediation effect for change in behavioral coping between sessions 1 and 5 for late symptom change (-0.87; bias corrected confidence interval -1.58, -0.53). No significant mediation effect was found for an alternative and plausible other mediator: change in challenge-autonomy coping domain (0.11; corrected CI: -0.75, 3.07).

Discussion

The present study showed that in a short-term psychiatric treatment for BPD, the observed change in distress might be underpinned by decrease in frequency of unproductive coping strategies. We showed that the therapist responsive interventions (based on the plananalytic idiographic case formulation) had a specific effect on the outcome between sessions 5 and 10. In this short-term treatment, we observed a responsiveness effect indicating that the use of the MOTR may wash out commonly observed links between intake and discharge indicators of distress (Grawe et al., 1990).

Our study indicated that change in behavioral form of coping strategies are central underlying patient processes in psychiatric treatments for BPD, observable in-session from the very first contact on. Whereas no change was found on a global indicator of coping, behavioral responses to stress decreased in this early-phase treatment of patients with BPD. This decrease in behavioral forms of coping responses between sessions 1 and 5 partially mediated the late outcome effects found specifically for the responsive treatment. It is important to note that decrease in behavioral coping was entirely completed before the measurement of the outcome started. In addition to harmful impulsive actions, behavioral forms of coping might be associated with a lacking mental representation of emotionally-laden interactions (McMain et al., 2013) which become, given our pattern of results, central treatment targets very early in treatment for BPD.

Contrary to our second hypothesis, no other specific category of unproductive coping strategies according to the CAPRS changed significantly. Whereas this result may be due to the limited power, it may also underline that the very early decrease of behavioral responses to stress are core in treatments for BPD.

Whereas the statistical analyses were adapted to the sample size, we did not assess self-reported behavioral coping which may have been a valuable additional perspective. Also, in the present study, we did not focus on the long-term effects of early change in coping.

In sum, we may hypothesize that one of the productive pathways to remoralization as initial task of psychological treatment - substantiated by symptom decrease and alliance increase in BPD (Kramer et al., 2014) - may pass through the therapist use of responsive individualized interventions (Caspar, 2007; Clarkin & Livesley, 2016). Such interventions may heighten in-session emotion intensity within the patient. We may hypothesize that this emotion intensity within an individually tailored therapeutic relationship enables the patient to make new emotional experiences. Decrease in behavioral forms of coping before session 5 into therapy substantiate these new experiences and may contribute to the patient's remoralization, the instillation of hope for real change, but also help develop the capacity of thinking and feeling about distressful contents – thus leaving behavioral coping behind - ; all these aspects are central for BPD and may explain early symptom change.

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Table 1

Structure of the CAPRS with excerpts from patients diagnosed with Borderline Personality Disorder (Perry et al., 2005)

Domain	Categories	Excerpt
Challenge :		
Competence	Problem-Solving (PS)	IS-c : « Is it really that I am uncapable to facing
	Information-Seeking (IS)	this event? »
Resources	Self-Reliance (SR)	SS-b : « I felt so bad, so my boyfriend and I went to
	Support-Seeking (SS)	the emergency service.»
Autonomy	Accomodation (A)	A-c : « As hard as it is, I accept it now ; my
	Negotiation (N)	girlfriend will not come back. »
Threat :		
Competence	Helplessness (H)	H-a : « I am only crying about this. It's too much."
	Escape (E)	
Resources	Delegation (D)	I-b : « I preferred going back into my room and just
	Isolation (I)	seeing nobody.»
Autonomy	Submission (S)	S-c : « I accepted that she took over all my
	Opposition (O)	business."

Note. CAPRS: Coping Action Patterns Rating Scale; Each category is broken down into three action levels: affective (a), behavioral (b) and cognitive (c). To save space, we only provide one example per domain.

Table 2

Characteristics of the patients as a function of group at baseline (N = 57; completers)

Variables	Condition			
	GPM & MOTR (n = 30)	GPM (n = 27)		
	n (%)	n (%)	$\chi^2(1)$	p-value
Gender (Female)	16 (53)	22 (81)	5.07	.02
Marital status			6.68	.03
Never married	8 (27)	16 (59)		
Married	13 (43)	5 (19)		
Separated, divorced	9 (30)	6 (22)		
Employment			1.68	.64
Unemployed	22 (73)	22 (81)		
Part-time	4 (13)	2 (7)		
Full-time	4 (13)	3 (11)		
Medication	19 (63)	19 (70)	0.32	.77
	M (SD)	M (SD)	t (1, 29)	p-value
Age (years)	35.63 (9.76)	31.56 (9.81)	1.57	.12
Number of BPD symptoms	6.77 (1.42)	6.77 (1.43)	0.03	.98
N current axis I disorder	1.90 (1.21)	1.78 (0.75)	0.45	.65
N current axis II disorder	0.70 (0.75)	0.67 (0.83)	0.16	.87

Note. All diagnostic information in co-morbidity with DSM-IV-TR Borderline Personality Disorder (BPD). GPM: 10-session version of General Psychiatric Management; MOTR: Motive-Oriented Therapeutic Relationship.

Table 3

Change in Coping in Borderline Personality Disorder undergoing 10 sessions of psychiatric treatment, with or without the motive-oriented therapeutic relationship (N = 57)

Coping	GPM & MOTR (n = 30)			GPM (n = 27)			Time		Time x Group	
	Int	Mid	Dis	Int	Mid	Dis	*F*	ES	*F*	ES
OCF	.47(.20)	.48(.20)	.51(.25)	.53(.19)	.47(.24)	.52(.25)	0.51	0.04	0.53	0.02
affective	1.0(0.6)	1.0(0.9)	1.0(0.7)	0.9(0.6)	0.9(0.8)	0.9(0.7)	0.01	0.06	0.05	0.29
behavioral	2.5(1.1)	2.0(1.0)	2.0(2.0)	2.2(1.3)	1.8(0.9)	1.9(1.2)	3.09*	0.56	0.05	0.32
cognitive	1.4(0.9)	2.0(1.5)	1.8(1.2)	1.7(1.4)	1.6(1.0)	1.6(1.2)	0.47	0.02	1.65	0.15
Challenge										
Competence	0.8(0.5)	0.9(1.0)	1.0(1.1)	0.8(0.6)	0.7(0.7)	0.9(0.8)	0.85	0.03	0.78	0.02
Resources	1.3(0.8)	1.1(0.8)	1.0(0.8)	1.3(0.8)	1.1(0.8)	1.2(0.8)	1.16	0.34	0.74	0.41
Autonomy	0.1(0.2)	0.2(0.3)	0.3(0.4)	0.3(0.4)	0.3(0.3)	0.3(0.4)	0.39	0.02	1.27	0.08
Threat										
Competence	1.7(1.1)	1.7(1.3)	1.6(1.6)	1.5(1.5)	1.3(1.0)	1.2(0.7)	0.41	0.37	0.21	0.15
Resources	0.3(0.5)	0.3(0.3)	0.2(0.4)	0.2(0.3)	0.2(0.3)	0.3(0.4)	0.03	0.16	0.31	0.19
Automony	0.8(0.7)	0.7(0.8)	0.8(1.1)	0.6(0.6)	0.6(0.5)	0.5(0.6)	0.03	0.11	0.25	0.09

Note. Are reported Means (with SDs in brackets); ANOVAs (repeated measures and on change value of each variable at discharge – each variable at intake); GPM: 10-session short version of General Psychiatric Management; MOTR: Motive-Oriented Therapeutic Relationship; Int: Intake (session 1); Mid: Mid-treatment (session 5); Dis: discharge (penultimate or session 9); OCF: Overall Coping Functioning; ES: Effect size (Cohen's *d*)

* $p < .05$